

An Expert HR System for Aligning Organizational Culture and Strategy

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This article presents a theoretical framework for the alignment of organizational culture and strategy by integrating knowledge from diverse areas of organizational studies, including strategic human resource management, organizational culture, and the specific design of human resource practices. It then describes an expert system that offers practitioners a step-by-step guide for improving their competitive position through the development of a "strategic" culture. It is proposed that organizations can achieve a strategic culture through two processes: (1) the careful planning of HR practices that promote behavioral norms necessary for achieving the organization's strategy, and (2) the deliberate selection of candidates who share the desired values that reinforce the organization's cultural norms.

Introduction

Since the early 1980s, human resource practitioners have been receiving two messages from the academic and professional literature regarding how to increase the competitive capacity of their organizations. The first of these messages refers to the importance of developing a "strong" culture that supports the organization's competitive strategy. The second message stresses that at a time in which competition among businesses centers on the possession and development of knowledge, the manner by which those who possess this knowledge (employees) are managed can be an important source of competitive advantage. In other words, two key factors for success in today's competitive environment are continuously espoused to be an organization's culture and its HR practices, both of which influence the behavior of organizational members.

Despite the continued insistence on this double message, the problem that confronts practitioners is how to put these ideas into practice. There are numerous articles that explain how to develop a "strong" organizational culture (Deal & Kennedy, 1982; Ouchi, 1981; Peters & Waterman, 1981), as well as references touting the positive impact that carefully designed HR policies can have on organizational efficiency (Devanna, Fombrun, & Tichy, 1984; Truss & Gratton, 1994; Wright & McMahan, 1992). Unfortunately, if practitioners want more than general affirmations and recommendations, it is difficult for them to find a practical tool that actually permits them to link their organizational culture and HR practices with the strategic objectives of their businesses. Given that an organization has clearly established objectives, there still remain questions that are particularly difficult to resolve, such as: What can an organization do to ensure that its culture supports its strategic goals? Are culture and the design of HR practices independent approaches for increasing an organization's success, or are they complementary? In short, what relationship exists among strategy, culture, and HR practices, and how can they be combined to strengthen an organization's competitive advantage?

Providing a tool for practitioners that allows them to respond to these questions was the goal of a joint research project developed by organizations from Spain, Italy, Belgium, and Holland and sponsored by the European Commission as part of the ESPRIT program. The specific objective of the project was to design an expert system for human resource planning to aid users in the

design of an integrated HR system consistent with their business strategy. The resulting commercial product¹ is intended for small to medium-sized businesses that lack specialized staff in strategic HR planning or personnel selection and will, therefore, most benefit from the expert system.

The current work presents the general framework of the aforementioned project. It begins by explaining the theoretical basis for the development of a "strategic" culture. The resulting theoretical framework integrates knowledge from the areas of strategic human resource management, organizational culture, and the specific design of HR practices. It then describes the development of the expert system and outlines the steps through which the system guides users in order to help them create and sustain the organizational culture best suited to achieve their strategic goals. The development of a strategic culture is achieved through the detailed planning of HR practices and the careful selection of organizational members. The article concludes with a discussion of the benefits and limitations of this type of expert system for business use.

Theoretical Framework Culture and Organizational Success

Strategies can be thought of as the diverse approaches that organizations choose to follow in order to achieve success or a competitive advantage. Meanwhile, culture can be described as the characteristic way in which work is done in different organizations. The perceived relationship between culture and competitive advantage has changed throughout the years. The authors who popularized corporate culture in the 1980s (Ouchi, 1981; Peters & Waterman, 1981) felt that there were particular cultural configurations that led to success. Other authors emphasized the importance of a strong culture as the key to success (Deal & Kennedy, 1982). They defined a strong culture as one in which there is consensus throughout the organization as to what the dominant cultural norms are and where the organizational members identify personally with the dominant cultural norms. Both of these positions regarding organizational culture have lost momentum over time. With respect to the first position, it is now believed that the insistence on "one best way" of doing things is wrong: Doing things a certain way or having a specific culture may be very positive for one organization, while the same culture may be fatal for another organization. If, in addition, the fatal culture is

strong, this would be even worse for the organization. The example of IBM illustrates this point. IBM is included in Peters and Waterman's book as an one of the "excellent" companies. However, in the subsequent years the company experienced great difficulties. These difficulties were exacerbated by the strength of its organizational culture — the same culture that had been acclaimed previously as the reason for its great success.

More recently, a contingent approach has been suggested in order to explain the relationship between culture and organizational success. A strong culture may be an important factor in obtaining a competitive advantage, but only under certain circumstances — that is to say, only when it is the appropriate culture (Miller, 1993; 1994). Exhibit 1 shows the proposed relationship between culture and organizational success. Here, culture is defined as the characteristic manner in which things are done in an organization (Uttal, 1983). If this manner of doing things is the most adequate for achieving success in the organization's competitive environment, then the culture is an asset for the organization. On the contrary, if the culture does not encourage the behaviors necessary for the organization to compete successfully in its environment, the culture is a liability for the organization.

As previously defined, strategy is the approach chosen by an organization to achieve success or a competitive advantage. Thus, the culture will be an asset for an organization if it encourages the behaviors that support the organization's intended strategy. That is, of course, assuming that the strategy chosen is appropriate for success given

the organization's competitive environment. In the current work, an organization that achieves this fit between its strategy and its culture is said to have a strategic culture. A key issue then, which will be further developed later in this article, is to identify the appropriate behaviors for a given strategy.

Culture Defined

The definition of culture is a broad notion that encompasses almost everything found in a society. This is reflected in one of the first explicit formulations of the concept, which originated in the field of anthropology, where it was defined as "that complex whole that includes knowledge, belief, art, morals, law, customs, and any other capabilities and habits acquired by man as a member of society" (Tylor, 1871: 7). Given this amplitude, the study of culture has often been found to be an unmanageable task. For this reason, when the concept is applied to the study of organizations, researchers tend to focus on a small set of cultural elements.

Rousseau (1990) describes organizational culture as being composed of a number of different elements that can be layered along a continuum running from high to low levels of observability and accessibility (see Exhibit 2). The cultural elements that are least observable and accessible to researchers are underlying assumptions and values. More observable, available elements of culture include behavioral norms, organizational stories, and events.

According to Rousseau, different methodologies are appropriate for studying different layers of

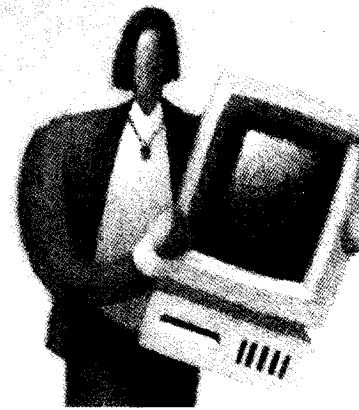


EXHIBIT 1

Culture and Organizational Success

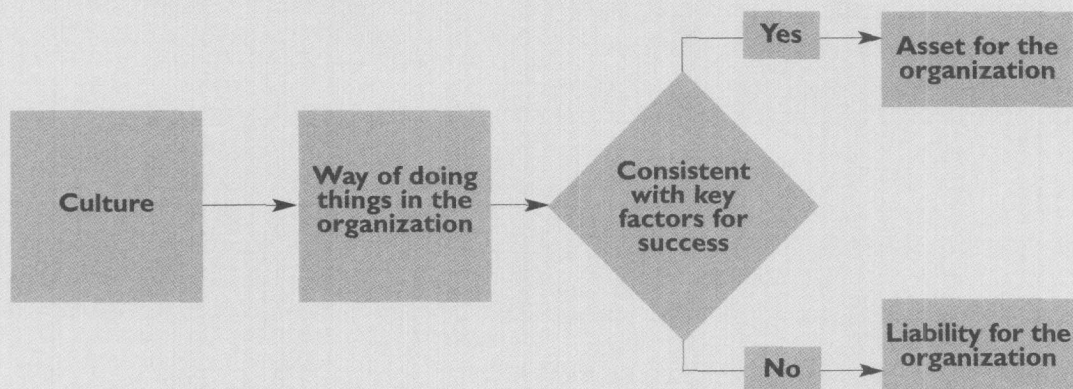
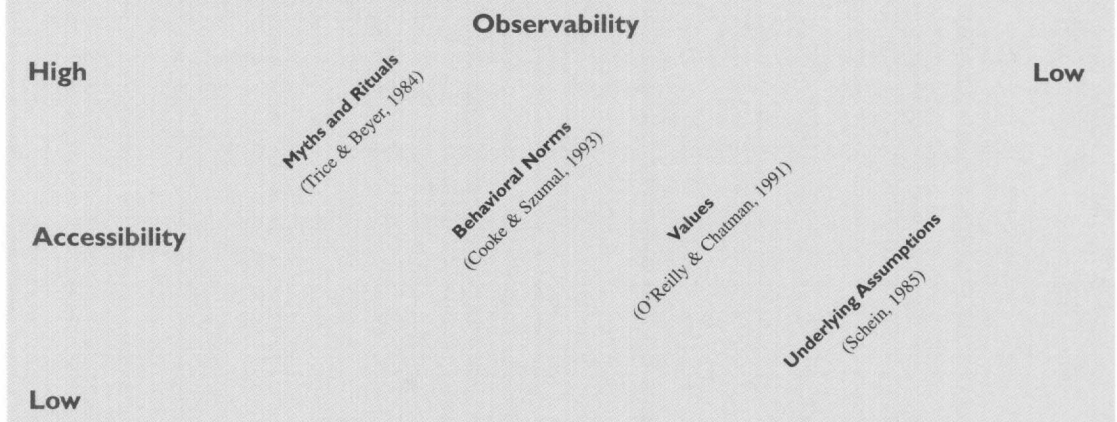


EXHIBIT 2

Elements of Organizational Culture



culture. The less observable, accessible elements, such as values and underlying assumptions, should be studied using qualitative methods that can tap their unique and often unconscious qualities. On the other hand, more observable, available elements such as behavioral norms and artifacts can be studied using quantitative methods — for example, surveys. Quantitative methods provide the advantage of being able to compare cultures across organizations.

While it is understood that culture is comprised of several layers of elements, researchers tend to focus their study of organizational culture at one of the levels. Many have chosen to study culture by assessing the values shared by individuals within an organization (O'Reilly, Chatman & Caldwell, 1991; Uttal, 1983; Van Maanen & Schein, 1979). Values are relatively stable and enduring basic beliefs in the desirability of certain behaviors or end states. Understood in this way, organizational cultures can be distinguished by what the members of different organizations consider to be important or desirable. For example, in some organizations members value being flexible and taking risks, while in other organizations members value following rules and security of employment.

Others study culture at a more observable level, choosing to focus on the expression of underlying values in the organization. Ouchi (1981), for example, defines culture as “the set of symbols, ceremonies, and myths that communicate the underlying values and beliefs of the organization to its employees.” Along the same line, Trice and Beyer (1984) study culture by examining the organization’s rites and rituals.

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Finally, others study culture at the level of behavioral norms (Cooke & Rousseau, 1988; Cooke & Szumal, 1993). O'Reilly (1989) affirms that culture is the set of central norms that characterize an organization and shape the behavior of individuals and groups within the organization. He explains that norms can be understood to be expectations regarding which behaviors are appropriate and which behaviors are inappropriate. Thus, in some organizations it is expected that people share their opinions with their boss, while in others people never express disagreement with their superior. Likewise, in some organizations a “good” leader takes control, while in others a “good” leader delegates responsibilities to subordinates.

For the proposed framework, the last of these positions is adopted. This choice is based on the following arguments:

- Culture studied as behavioral norms has been supported empirically. Hofstede et al. (1990) showed that organizations from the same national culture differed more in the norms they followed than in the values they shared.
- Culture studied as behavioral norms allows all organizations to have a culture. Ouchi (1981) classified organizations as bureaucracies, markets, or clans. If culture is considered to be shared values, only clans would have an organizational culture. It is clear that bureaucracies and market organizations also have cultures or a well-defined way of doing things.
- Culture studied as behavioral norms allows for culture change. Hofstede (1993) argues that values are acquired in early youth and are enduring

characteristics of the person. In contrast, behavioral norms are more malleable. In fact, the whole notion of human resource management rests on the assumption that human behavior can be driven by management practices. For example, Schuler (1992) defines strategic human resource management as "all those activities affecting the behavior of individuals in their efforts to formulate and implement the strategic needs of the business."

■ Finally, culture studied as behavioral norms favors a quantitative and, thus, comparative methodological approach. The current approach to the study of organizational culture requires that culture be studied across different organizations, requiring the study of observable, accessible elements of organizational culture. As Rousseau (1990) explains, behavioral norms are observable, available elements of culture that can be studied using quantitative methods in numerous organizations.

Creation and Maintenance of Behavioral Norms

The question that must be answered next is, Where do these norms that define an organizational culture come from? In some cases, behavioral norms emerge due to the fact that the organizational members share certain values that cause them to have expectations as to which behaviors are appropriate and which are not. There are other situations, however, where norms are not the result of shared values among organizational members; rather, they are determined by organizational rules and practices. Take McDonald's, for example, where the employees working in the restaurant behave as they do because of tightly controlled organizational practices. Even in cases where employees do not share the dominant values of the company (they don't believe that following the strict work processes required by the organization is a desirable behavior), they have no choice but to adhere to these norms, given the high degree of regulation in their jobs. Accordingly, cultural norms are determined by both values and organizational practices.

If the organizational norms are those required to successfully compete in the organization's environment, the more strictly these norms are followed, the stronger the organization's competitive position. This is the aforementioned contingency approach used to explain the importance of strong cultures. The question that follows is, how does one establish a strong culture?

A strong culture is defined by the intensity and crystallization of its norms (O'Reilly, 1989). Intensity refers to the amount of approval or disapproval that is associated with the norms, while crystallization refers to the degree of consistency with which such norms are held within different parts of the organization. In order for these two elements to be present in an organization's culture, two things are necessary: (1) the HR practices must send messages to the employees regarding the behavior that is expected of them — that is, messages that will establish the behavioral norms that permit the organization to achieve its strategic objectives, and (2) organizational employees must be selected very carefully so that their values are congruent with those values that support the organizational norms. Following, the reasons for the importance of these two steps in the creation of a strong culture are explained in more detail.

1. Behavioral Norms Through HR

Practices. Behavioral norms are established through the shared information and experiences of employees within the organization. According to Schwartz and Davis (1981), HR practices provide information and shape the behavior and experiences of employees, thus becoming the means whereby cultures are created and sustained. It is therefore clear that the creation of norms to support an organization's business strategy depends on the careful design of the organization's HR practices.

To this end, an organization's business strategy must first be determined. One of the many different strategy typologies that has been proposed is that of Miles and Snow (1978). Their typology has been found to be empirically sound (Doty, Glick, & Huber, 1993; Rajaratnam & Chonko, 1995; Zahra & Pearce, 1990) and has been used previously to study the link between business strategy and specific HR practices (Saura & Gomez-Mejía, 1996). Miles and Snow distinguish two basic strategies: defender and prospector². A defender strategy is one in which the organization's primary strategy is to protect the firm's existing market share — that is, defenders concentrate on what they currently do and how to do it better. A prospector strategy, on the other hand, emphasizes growth. Prospectors continuously look for new ideas and new products to introduce.

It is further suggested by Miles and Snow (1984) that particular HR practices correspond to the defender and prospector strategies. For instance, they argue that a defender strategy is best supported with HR practices that emphasize



internal recruitment, process-oriented performance appraisals, and an internally consistent compensation system, while a prospector strategy is best implemented with HR practices that emphasize external recruitment, results-oriented performance appraisals, and an externally competitive compensation system.

Gomez-Mejía, Balkin, and Cardy (1995) have developed this approach in a more systematic way. They identify six HR areas (i.e., work flows, staffing, employee separations, performance appraisal, training, and compensation) and suggest strategic options that correspond to the two basic strategy types. Take the area of training, for example, where the practices congruent with a defender strategy emphasize specific on-the-job training on an individual basis, meanwhile the training practices for a prospector strategy tend to emphasize off-the-job, team-based training of a more general nature (Gomez-Mejía et al., 1995: 59). The current work is based upon such a correspondence between the two types of business strategy and HR practices.

2. Behavioral Norms Through Values. As previously mentioned, values are assumed to be relatively stable, enduring beliefs. It is therefore unlikely that an organization can change the values of its members. This being so, the best way for an organizational culture to include the values that support its strategy is to hire individuals who already share the same values. The selection of individuals according to the fit between their values and the values that support the organization's strategy can be achieved through a selection procedure that incorporates the concept of person-organization (P-O) fit.

P-O fit refers to the compatibility between employees and the organization in which they work (Kristof, 1996). This compatibility is often measured in terms of the congruence between individual and organizational values (Chatman, 1991; O'Reilly et al., 1991). Studies have shown the positive influence of P-O fit on work attitudes, such as job satisfaction and organizational commitment (Boxx, Odom, & Dunn, 1991; Chatman, 1991), on turnover (Bretz & Judge, 1994; O'Reilly et al., 1991), and on work performance (Bretz & Judge, 1994).

Bowen, Ledford, and Nathan (1991) made one of the first calls for the inclusion of P-O fit in the selection process. They argued that the match between individuals' personality, values, and interests and the organizational culture, in addition to the necessary match between individuals'

knowledge, skills, and abilities and the job requirements, should be an important consideration when hiring employees for long-term employment. According to Bowen et al. (1991), hiring people who fit the organizational culture would lead not only to more favorable employee attitudes and behavior, as subsequent studies have shown, but it should also help to reinforce the organization's culture.

In sum, it is concluded that there are two practices by which an organization can achieve a strong strategic culture (see Exhibit 3). First, the organization must carefully plan its HR practices so that they are aligned with its strategy in order to promote the desired behavioral norms. Second, the organizational values can be strengthened through the deliberate selection of candidates who share the desired values. While personnel selection is, of course, an HR practice, it is considered here as a separate step to emphasize its unique impact on values. Based on this theoretical framework, the current work offers an expert system to guide practitioners in the development of a "strategic" culture. A description of the development of the expert system follows.

Expert System Development

Expert systems are programs designed to model the knowledge of domain experts in order to help users arrive at expert-quality solutions. They model the human decision-making process by applying questions and heuristics used by domain experts (Stefik, 1990). Studies have shown that expert systems improve user performance, as well as enhance user learning (Fedorowicz, Oz, & Berger, 1992; Moffitt, 1994; Sturman, Hannon, & Milkovich, 1996; Sviokla, 1990). According to Sturman, Hannon, and Milkovich (1996), the use of expert systems in HR management, including areas such as employee selection, job analysis, performance appraisal, and compensation, is on the rise. Given the fact that HR management includes many distinct areas of specialization, expert systems ought to be very useful in providing expertise in these different domains to HR managers.

The HR planning system presented here was designed according to standard system model development using the CommonKADS methodology (De Hoog, Benus, Vogler, & Metselaar, 1996). The authors, along with human resource experts from participating companies in Spain, Italy, and Belgium, provided domain knowledge (specific to the domain of HR planning and

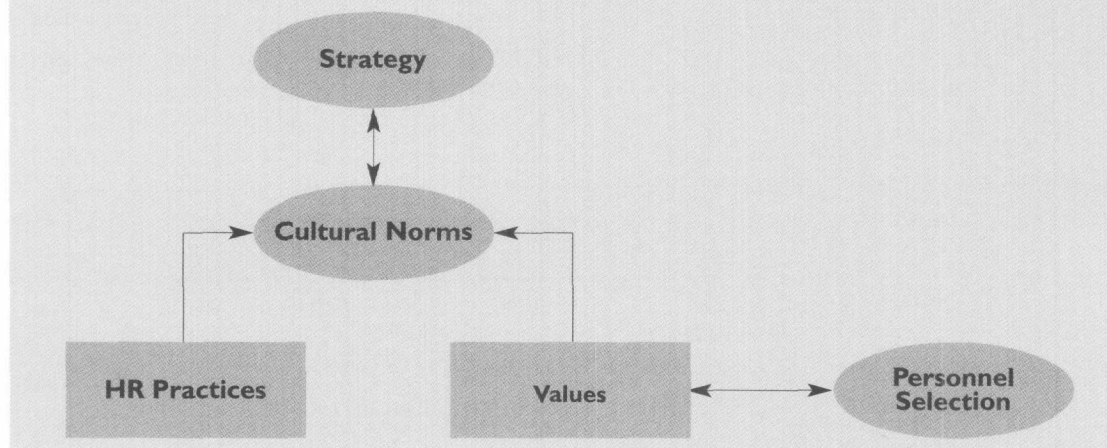
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EXHIBIT 3

The Design of a Strategic Culture



personnel selection), inference knowledge (describing the reasoning process), and task knowledge (controlling the inference process in terms of repetition, branching, and obtaining external data) to the system designers. A prototype was developed based on this information. The first prototype included only the first step of the HR planning process (described below). This prototype was pilot tested with HR experts in each of the participating companies. The system was then modified based on feedback from these pilot tests. A second prototype including the modifications and the second step of the HR planning process was then introduced and a second round of pilot tests was conducted. Thus, the final version of the system was the result of this step-by-step process that involved expert input at every step.

HR Planning System

Strategic Assessment of HR Practices

Strategy Assessment. The first step of the HR planning system is the assessment of the organization's strategy. After the presentation of a brief description of the Miles and Snow typology, users must respond to six questions about their organization's business strategy. These questions were adapted from Miles and Snow's (1984) descriptions of the two strategies. Each question is presented as a pair of strategic options. One of the options corresponds to a defender strategy while the other corresponds to a prospector strategy. For each question, users must choose one option from the pair that best represents their organization (see Exhibit 4). The responses to

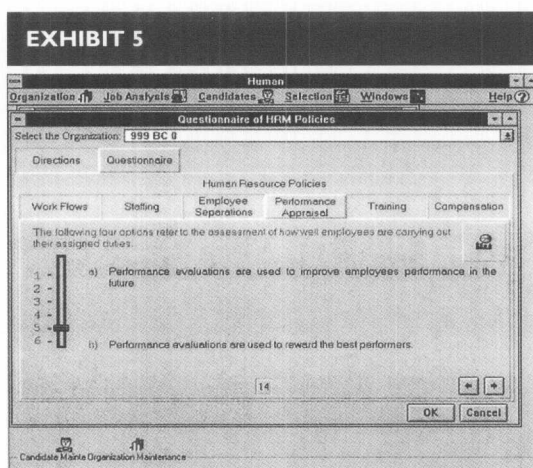
these questions are used to determine whether the organization follows a defender or prospector strategy.

EXHIBIT 4

Assessment of HR Practices. The second step carried out by the system is the assessment of the organization's actual HR practices. Users must respond to four questions each from six categories of HR practices. These categories include the strategic areas — as identified by Gomez-Mejía et al. (1995) — of work flows, staffing, employee separations, performance appraisal, training and development, and compensation. Each of the questions represents strategic HR options at two opposite poles on a continuum, the best option for a defender strategy at one end and the best for a prospector strategy at the other (see Exhibit 5.)

Determination of Strategic Alignment of HR Practices. The final step in the determination of the strategic alignment of HR practices,





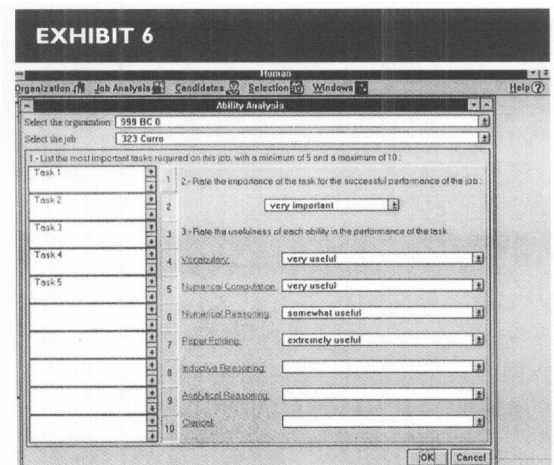
compares the results of the assessment of actual HR practices to the "ideal" set of HR practices which should promote the cultural norms that best support the organization's business strategy. Each of the actual HR practices that does not correspond to the "ideal" HR practice is shown in red, while each of the actual HR practices that does correspond is presented in green. The results of this comparison give the user a detailed picture of the organization's current HR practices and, more important, they identify the current HR practices that support the organization's strategic goals, as well as those that hinder the accomplishment of the strategic goals of the organization.

Personnel Selection

As mentioned previously, organizational norms are not established solely through HR practices but are also influenced by the values of organizational members. Thus, a personnel selection procedure is included in the HR planning system that assesses two types of fit: person-job fit and P-O fit. The system first provides a step-by-step guide for determining the person-job fit of candidates, and then a test of values is included to identify those candidates who share the values that support the organization's business strategy.

Assessment of Person-Job Fit. The first step in the determination of person-job fit is the completion of a job analysis in order to identify the knowledge, skills, and abilities (KSAs) required to perform the job in question. Thus, users must complete a job analysis of the specific job for which candidates are being hired. The HR planning system provides a structured job analysis that asks users to list the 10 most important tasks required of the job in question and then to rate the importance of each task to the successful performance of the job. Next, they are asked to rate

the usefulness of each of seven different general abilities for the performance of each task (see Exhibit 6). The abilities include vocabulary, numerical computation, numerical reasoning, spatial abilities, inductive reasoning, analytical reasoning, and clerical abilities. Candidates are then tested to determine which of them has the highest level of the required abilities. The expert system combines the results of the job analysis and the candidates' abilities tests to determine the candidates who best fit the job.



Assessment of Person-Organization Fit.

After assessing candidates' person-job fit, P-O fit is assessed in order to determine which candidates share the desired cultural values. The HR planning system uses the previous results of the strategy assessment to provide a list of values that support the business strategy of the organization. A subset of values taken from O'Reilly et al.'s (1991) Organizational Culture Profile that have clear relationships to defender and prospector strategies are included in the list (see Appendix A). Candidates are then tested to identify those that share these same values.

Final Selection of Candidates. The final selection of candidates is determined by a combination of the results of the person-job and P-O fit assessments. A final ranking of candidates based upon those who have both the abilities required of the job and who share the desired values is provided by the system.

Conclusion

This article has presented the theoretical framework and general guidelines for an instrument that, making use of information technology, permits organizations to improve their competitive position through the development of a "strategic" culture. Many of the areas that tend to be studied

in a dispersed, often independent manner in the literature (i.e., strategy, culture, and HR practices) have been presented here within one integrated framework. The system can provide human decision-making support, as well as serve as a training tool that helps practitioners to reflect upon the importance of human resource planning for the achievement of their organization's strategic goals.

We believe the system is especially valuable for small and medium-sized companies. Given that HR management includes diverse areas of domain-specific knowledge, it is not likely that small HR departments have specialized staff in each of these areas. Therefore, expert systems that provide highly specialized knowledge — in this case, of strategic HR planning and personnel selection — should be extremely useful tools.

In any case, it must also be recognized that the current approach may appear to support a mechanistic view to the design of a strategic culture. Nothing is farther from the truth. In the first place, many elements of culture (e.g., characteristics and values of the founders, the organization's idiosyncratic history, symbols, rituals, etc.) are not included in this computer-based instrument. Thus, the current approach should be complemented by other considerations that cannot be explicitly codified to be included in an expert system.

The description of the HR planning system provided may give the impression that culture change is a simple process that only requires the modification of HR practices with careful attention to the practice of personnel selection. We are aware that it is never so simple in practice because there exist numerous barriers to change. Culture, by defining which behaviors are appropriate and which are not, serves to reduce the uncertainty of organizational members. As a result, any cultural change brings with it the potential resistance of employees due to the consequent increased uncertainty. This potential resistance to change, which is not included in the current system, should be expected and the additional measures taken.

Finally, it should be noted that Miles and Snow's is one of many strategic classifications that could have been chosen; other popular typologies include those of Porter (1980) and Rumlet (1974). Thus, one must remember that the recommendations of the system are based on one particular classification, which does not

cover the whole range of strategic issues faced by organizations.

Despite these limitations, it is believed that the proposed theoretical framework and resulting HR planning system are useful for practitioners who wish to incorporate in the daily practice of their organizations expert knowledge from a number of diverse areas within HR management. The system offers recommendations to the user regarding the strategic alignment of its HR policies and the selection of job candidates based on the knowledge of experts.

Footnotes

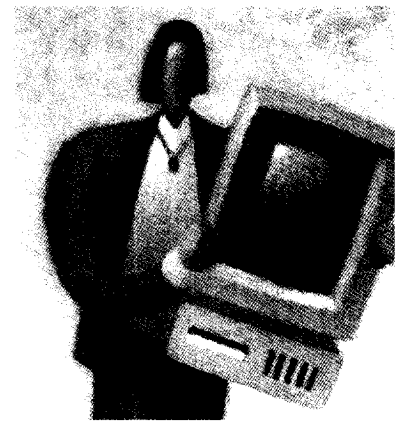
¹ Inquiries regarding the HR planning system should be directed to Juan Antonio Lopez García, Director de Tecnología, Infoservicios, S.A., by e-mail: Juanantonio.lopez@sema.es.

² Miles and Snow's typology includes a third intermediate "analyzer" strategy. However, following Gomez-Mejía, Balkin, and Cardy (1996), the current work reduces Miles and Snow's typology to two basic strategies.

Biographical Sketches

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Appendix A

Strategic Values

<u>Defender Strategy</u>	<u>Prospector Strategy</u>
Stability	Flexibility
Rule-oriented	Innovative
Predictability	Quick to take advantage of opportunities
Attention to detail	Risk taking
Being precise	Autonomy
Security of employment	Team-oriented
Highly organized	Results-oriented

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